

What is Claimed Is:

1. A method in a network switch, the method comprising:  
 receiving a data packet on one of a plurality of network switch ports; and  
 generating a packet signature of the received data packet by hashing selected portions of the received data packet based on prescribed hash action values of a user-programmable template.

2. The method of claim 1, wherein the network switch includes a hash generator, the generating step including:

hashing the selected portions based on a first group of the hash action values specifying initiating the hash generator at a beginning of the selected portions, respectively; and

5 halting the hash generator based on a second group of the hash action values specifying halting the hash generator at an end of the selected portions, respectively.

3. The method of claim 2, wherein the selected portions of the received data packet have prescribed data values matching the user-programmable template, the method further including storing the packet signature of the data packet in a memory for the corresponding user-programmable template.

4. The method of claim 3, further comprising:

receiving a second data packet on the one network switch port;

generating the packet signature for the second data packet; and

comparing the packet signature for the second data packet with the stored packet signature for

5 classification of the second data packet relative to the user-programmable template.

5. The method of claim 4, wherein the comparing step includes simultaneously comparing the packet signature for the second data packet with a plurality of the stored packet signatures for classification of the second data packet relative to a plurality of the user-programmable templates, respectively.

6. The method of claim 5, wherein each of the network switch ports include a packet classifier module having the hash generator, the step of simultaneously comparing the packet signature for the second data packet with a plurality of the stored packet signatures being performed in the

Subs  
A2

09585250050700

5 corresponding packet classifier module of the one network switch port having received the second data packet.

7. The method of claim 2, wherein the comparing step includes simultaneously comparing the packet signature with a plurality of stored packet signatures for classification of the data packet relative to a plurality of the user-programmable templates, respectively.

8. The method of claim 1, wherein the selected portions of the received data packet have prescribed data values matching the user-programmable template, the method further including storing the packet signature of the data packet in a memory for the corresponding user-programmable template.

9. The method of claim 8, further comprising:  
receiving a second data packet on the one network switch port;  
generating the packet signature for the second data packet; and  
comparing the packet signature for the second data packet with the stored packet signature for  
5 classification of the second data packet relative to the user-programmable template.

10. The method of claim 9, wherein the comparing step includes simultaneously comparing the packet signature for the second data packet with a plurality of the stored packet signatures for classification of the second data packet relative to a plurality of the user-programmable templates, respectively.

11. The method of claim 1, wherein the user-programmable template includes a plurality of hash action values, the generating step including:

initiating hashing of a first of the selected portions based on a first of the hash action values specifying starting hashing at a prescribed beginning of the first of the selected portions; and

5 halting hashing for the first of the selected portions based on a second of the hash action values specifying halting hashing at a prescribed end of the first of the selected portions.

12. A network switch comprising:

Sub 9  
a2-

Patent

002090 "562011"

007090" 060700 5678950

- Add B)

13. The switch of claim 12, further comprising a template controller configured for storing the packet signature of the received data packet for the corresponding user-programmable template as one of the prescribed user-defined switching policies in response to a store signal.

15. The switch of claim 12, wherein each hash action values specifies a location offset relative to a beginning of the received data packet, and one of an initiate hash action specifying initiation of hashing by the hash generator at the corresponding location offset and a halt hash action specifying halting of hashing by the hash generator at the corresponding location offset.